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ON DERMAPTERA AND ORTHOPTERA FROM SOUTH-EASTERN BRAZIL

BY JAMES A. G. REHN

The material treated in the following pages was submitted to us for study by Dr. Herman Von Ihering, formerly Director of the Museu Paulista at São Paulo, Brazil. The first set of the material, aside from the types of the new species, has been returned to that institution, the remainder being retained, with the types of the new forms, in the collection of the Academy of Natural Sciences of Philadelphia.

The material studied has a particular appeal to us, as, while it is from a number of localities, it furnishes a considerable amount of data on the eastern distribution of many types of Orthoptera occurring in the Paraná drainage, and also gives a fairly clear idea of the relatively narrow area of distribution of many of the coast forms. The present paper presents merely the systematic study and the geographic data of the material, but at a later date, in with other information, we hope to more critically discuss the important features apparently governing the distribution of the Dermaptera and Orthoptera of southeastern Brazil.

The localities represented in the collection, with their position as far as we can ascertain from the charts and information available,¹ are as follows:

<i>Locality</i>	<i>State</i>	<i>Position</i>
São João de Barra	Rio de Janeiro	At mouth of the Parahyba River.
Itatiaya	Rio de Janeiro	"Campo"—Apparently field conditions on or near the great peak of Itatiaya.
Alto do Serra	São Paulo	Pass over Serra do Cubatao between Santos and São Paulo.
Cantareira	São Paulo	

¹ Much of our information relative to localities in the State of São Paulo has been gathered from: "Apontamentos Historicos, Geographicos, Biographicos, Estatisticos e Noticiosos da Provincia de S[ão] Paulo. Colligidos por Manoel Eufrazio de Azevedo Marques." Vol. I. Rio de Janeiro. 1879.

<i>Locality</i>	<i>State</i>	<i>Position</i>
Estação Campo Grande	São Paulo	Apparently on Paraná side of coast mountains east of São Paulo.
Estação Piassaguéra ..	São Paulo	Another name for the port of Cubatao, between Santos and São Paulo, at east foot of Serra Cubatao.
França.....	São Paulo	Northwestern part of state, near boundary of Minas Geraës. Paraná drainage.
Itatiba.....	São Paulo	
Piquete.....	São Paulo	In coast mountain region in northwestern part of state.
Piracicaba.....	São Paulo	East central São Paulo on Piracicaba River, tributary of Teite River (Paraná).
Salto Grande.....	São Paulo	Central part of state in Paraná drainage.
Santos.....	São Paulo	East coast.
Ypiranga.....	São Paulo	Environs of São Paulo.
Castro.....	Paraná	Central part of state. Paraná drainage.
Porto Majoli.....	Paraná	
Hamonia	Santa Catharina	In eastern part of state about sixty miles from coast.
São Francisco.....	Santa Catharina	East coast.
Porto Alegre.....	Rio Grande do Sul	East coast.

The species treated in the present paper number eighty-one, belonging to sixty-three genera, of which total nine species are described as new. The number of specimens in the series is one hundred and eighty-three.

The author wishes to thank Dr. Von Ihering and the authorities of the Museu Paulista for the opportunity to study this material.

DERMAPTERA

PYGIDICRANIDAE

***Pyragra brasiliensis* (Gray)**

1832. *Forficula brasiliensis* Gray, in Griffith, Animal Kingdom, xv, p. 184, pl. 78, fig 2. [Brazil.]

São Paulo, State of São Paulo. February 24. (Garden field.)
One female.

This individual agrees with a female from Puerto Bertoni, Paraguay.

LABIDURIDAE

Labidura xanthopus (Stål)

1855. *F[orficelisa] xanthopus* Stål, Öfv. Vet. Akad. Förh., xii, p. 348. [Rio de Janeiro, Brazil.]

Santos, State of São Paulo. October, 1907. (H. Lüderwaldt.)
Two males, six females.

França, State of São Paulo. October, 1910. (E. Garbe.)
Two females.

It is very probable that Borelli's *Demogorgon longipennis*² is a synonym of this species, as it was based apparently on no character than the presence of visible alar squamae. The present series contains two females which possess visible squamae, and we have also seen another individual of the same sex of similar character. In each case the winged type was taken with the non-winged phase and we are convinced this is a condition similar to that found in the genus *Psalis*. The species is, however, very distinct from the widely-spread "*riparia*" type; *xanthopus*, as pointed out by Borelli (vide supra), differing in the sculpturing of the male abdomen, in the shape of the pronotum and of the forceps and of the disto-dorsal abdominal segment of the male. In addition the limbs are also more slender in *xanthopus*.

LABIIDAE

Strongylopsalis iheringi new species (Plate X, fig. 1.)

Clearly a member of the present genus and more nearly allied to *S. boliviana* (Bormans) than to *cheliduroides* (Bormans), the genotype. The new form agrees with *boliviana* in the general size, the number of antennal joints and the general form and symmetry of the forceps. From *boliviana*, however, it differs in the greatly produced linguiform process of the pygidium and in having a decided tooth on the internal face of the male forceps.

Type.—♂; Itatiaya, State of Rio de Janeiro, Brazil. April, 1906. (H. Lüderwaldt; in campo.) [Acad. Nat. Sci. Phila., Type no. 5243.]

Size medium; form subdepressed; surface generally smooth, faintly impresopunctulate on the dorsum of the abdomen. Head subtrigonal; eyes hardly at all prominent; genae subparallel caudad of the eyes, caudo-lateral angles broadly rounded; antennae composed of fourteen joints, proximal joint

² Boll. Mus. Zool. Anat. Comp. Torino, xix, no. 479, p. 4.

moderately robust, in length subequal to the third, second joint very short, fourth joint rather short, thence distad the joints are moniliform, longitudinal, regularly increasing in length; dorsal surface of the head with the usual sulci subobsolete, caudal margin faintly emarginate mesad. Pronotum with greatest length subequal to median width, cephalic margin truncate, cephalo-lateral angles narrowly rounded, lateral margins straight and regularly diverging caudad, caudo-lateral angles well rounded, caudal margin considerably arcuate, lateral margins finely cingulate; a delicate medio-longitudinal line is finely impressed cephalad and faintly elevated caudad. Tegmina slightly shorter than the pronotum; strongly and continuously cingulo-carinate at the lateral bend; sutural margins straight, attingent; distal margin obliquely arcuato-truncate, the slope of the same directed laterad. No exposed wings. Abdomen faintly fusiform, the second and third dorsal segments with poorly defined lateral folds; disto-dorsal segment transverse, its greatest width more than twice its greatest length, lateral margins of same subparallel, distal margin shallowly arcuato-emarginate at the base of each arm of the forceps, shallowly arcuato-emarginate dorsad of the base of the pygidium, a distinct J-shaped impressed area present mesad and not quite touching the caudal margin; forceps heavy, symmetrical, slightly shorter than the abdomen, proximal two-thirds of the arms straight, distal third gently arcuate inward, the extreme apex faintly hooked, the internal margin at five-eighths the length from the base with a short but distinct tooth, proximad of which there is a continuous though narrow projection of the margin, moderately arcuate with several very fine serrulations; process of the pygidium almost half as long as the abdomen, linguiform, faintly narrowing from the base to the middle, then faintly expanding again distad to the apex, which latter is obtuse-angulate emarginate; disto-ventral segment transverse, free margin arcuate with a very shallow V emargination mesad. Limbs rather short; femora moderately robust.

Allotype.—♀; Same data as type.

Differing from the description of the type chiefly in the features here given. Disto-dorsal abdominal segment with distal margin truncate mesad and faintly oblique truncate at base of forceps; forceps much lighter in build than those of the male, little more than half as long as the abdomen, triquetrous in proximal section, regularly attenuate from base, nearly straight in basal half, gently bending inwards in distal half with the extreme apex as in the male, the arms of the forceps well crossed, internal margins of forceps sublamellate proximad with several distinct serrations; pygidium tucked between the forceps; disto-ventral abdominal segment with the free margin well arcuate with a faint median angulation.

General color blackish brown with a touch of maroon on the abdominal segments, the translucent lateral margins of the pronotum showing up dark honey yellow. Mouth parts clay color; antennae verona brown; limbs mikado brown; forceps and pygidial process kaiser brown.

Measurements (in millimeters)

	♂ (<i>type</i>)	♀ (<i>allotype</i>)
Length of body (exclusive of the forceps),	9.5	10
Length of pronotum,	1.9	1.9
Length of tegmen,	1.5	1.6
Length of forceps,	4.2	3.2
Length of pygidial process,	1.6	

In addition to the type and allotype we have examined three paratypic females bearing the same data as the type.

We take pleasure in dedicating this striking species to the illustrious Brazilian zoologist Dr. Herman Von Ihering, to whose kindness we owe the opportunity to study the present collection.

***Sparatta clarkii* Kirby**

1896. *Sparatta clarkii* Kirby, Journ. Linn. Soc. London, Zool., xxv, p. 526, pl. xx, figs. 8, 8a. [Tejuca, Petropolis, Constancia and Theresopolis, Brazil.]

Hamonia, State of Santa Catharina. June 12. (Lüderwaldt; under bark of tree.) One male, two females, one immature male, one immature female.

We are using this name tentatively, as we are not convinced of the distinctness of this form from Serville's *pelvimetra*. The present male material differs from the description of Serville's species in the uniformly black head, pronotum, tegmina and exposed portion of wings, but what value should be attached to this difference is uncertain. The females are representative of the form called *pygidiata* by Kirby, which Burr has suggested as a probable synonym of *clarkii*. We are quite certain the latter view is correct. The adult females agree with the male in coloration. What relationship *clarkii* has to *rufina* Stål we do not know, but here again there is strong probability of more synonymy. Stål does not mention the medio-internal tooth on the forceps, but this may have been a pure oversight. The male specimen has the left branch of the forceps imperfect.

***Parasparatta nigrina* (Stål)**

1855. *S[paratta] nigrina* Stål, Öfv. Kongl. Vetensk. Akad. Förh., xii, p. 350. [Rio de Janeiro, Brazil.]

Hamonia, State of Santa Catharina. August, 1910. (Lüderwaldt; under bark of tree.) One male, one female.

FORFICULIDAE

Doru lineare (Eschscholtz)

1822. *Forficula linearis* Eschscholtz, Entomographien, p. 81. [Santa Catharina, Brazil.]

São Paulo, State of São Paulo. February 1; garden field.
Two males.

These specimens are true *lineare* in the relative length of the pygidial spine and the curve of the branches of the forceps when seen in lateral aspect, but the wings do not extend distad of the tegmina, in this resembling the North American *aculeatum*. This is the first demonstration we have had of the presence of intra-specific wing dimorphism, such as we find in *Psalis* and *Labidura*, in this genus. In consequence the key to certain species of this genus recently published by Rehn and Hebard³ will require some modification, the presence or absence of exposed portions of the wings not being a valid diagnostic character and therefore it should be eliminated from the key. The other features given are, however, of prime importance.

Doru luteipenne (Serville)

1839. *Forficula luteipennis* Serville, Hist. Nat. Ins., Orthopt., p. 46. [Brazil.]

Piassaguéra, State of São Paulo. October, 1910. (H. Lüderwaldt.) Two males.

This is the first opportunity we have had to examine this striking species, which has generally been considered to be a synonym or but a variety of *lineare*. It is in fact a very distinct species, separated from *lineare* and *aculeatum* by the heavier sculpture of the abdomen, particularly of the disto-dorsal segment of the same, and by the elongate limbs, the tarsi, especially, being much more elongate. In addition, the position of the tooth on the internal margin of the male forceps is median instead of distad as in *lineare*.

ORTHOPTERA

BLATTIDAE

Ischnoptera brasiliensis Brunner

1865. *I[schnoptera] brasiliensis* Brunner, Nouv. Syst. Blatt., p. 131, pl. iii, figs. 12a-c. [Brazil.]

³ Journ. N. Y. Entom. Soc., xxii, pp. 89 to 90, (1914).

Ypiranga, State of São Paulo. June, 1908. (H. Lüderwaldt.)
One male.

Ichnoptera mexicana Saussure?

1862. [*Ichnoptera*] *mexicana* Saussure, *Révue et Magasin de Zoologie*, 2e ser., xiv, p. 170. [Tropical Mexico.]

Ypiranga, State of São Paulo. October, 1912. (H. Lüderwaldt.) One female.

We refer this specimen doubtfully to *mexicana*, a species which has not been recorded so far to the southward. The present specimen, however, agrees with all but several very minor features of Saussure's description, and, without material of unquestioned *mexicana* for comparison, the best course appears to be to treat it in the present fashion. Actual comparison may show unmentioned characters worthy of specific value and necessitate the separation of the present insect from the more northern type.

Neoblattella fasciata (Brunner)

1865. *Phyllodromia* *fasciata* Brunner, *Nouv. Syst. Blatt.*, p. 107. [Brazil.]

Castro, State of Paraná. 1907. (E. Garbe.) One female.

This species is closely related to *N. conspersa* (Brunner) of eastern and northeastern Brazil, which it probably represents in the southern part of the country. It is easily recognized by its distinctive livery. The present record is the first one known to us with an exact locality.

Epilampra caliginosa Walker

1868. *Epilampra caliginosa* Walker, *Catal. Blatt. Brit. Mus.*, p. 207. [Tejuca, Brazil.]

São Paulo, State of São Paulo. February 8, 1906. One female.

This apparently is but the second record of the species. It has considerable resemblance to *E. agathina* (Saussure) from the same general region, but it is smaller, with a differently shaped pronotum and somewhat different pattern. The pale proximal antennal joint is sharply contrasted with the blackish of the remainder of the antennae. As the female of this species was previously unknown, the measurements of that sex may be of interest: length of body, 29.5 mm.; length of pronotum, 7; greatest width of pronotum, 8.7; length of tegmen, 27; greatest width of tegmen, 8.6.

Tribonium spectrum (Eschscholtz)

1822. *Blatta spectrum* Eschscholtz, Entomographien, p. 85. [Santa Catharina, Brazil.]

Ypiranga, State of São Paulo. October, 1912. (H. Lüderwaldt.) One male.

Santa Catharina. One male. [Hebard Cln.]

These records appear to be the first from Brazil with exact data since the original description.

Chorisoneura personata Rehn

1916. *Chorisoneura personata* Rehn, Trans. Amer. Entom. Soc., xlii, p. 249, pl. xv, fig. 31. [Independencia, state of Parahyba, Brazil.]

Bahia, State of Bahia. February 1. (Garden field.) One female.

This specimen while slightly larger than the type and paratypic individuals of the species is otherwise inseparable.

MANTIDAE

Acontiothespis concinna (Perty)

1834. *Mantis concinna* Perty, Delect. Anim. Articulat. Brasil., p. 117, pl. 23, fig. 5. [Rio Negro, Brazil.]

Estação Alto do Serra, State of São Paulo. December, 1910. (E. Schwebel.) One male, one female.

Santos, State of São Paulo. August, 1910. (H. Lüderwaldt.) One female.

Saussure and Zehntner have definitely recorded this species from Rio de Janeiro, Caravelles and Bahia.

Coptopteryx argentina (Burmeister)

1864. *M[antis] argentina* Burmeister, Berl. Entom. Zeitschr., viii, p. 208. [Argentina between Buenos Aires and Mendoza.]

Porto Alegre, State of Rio Grande do Sul. June, 1912. (Dr. H. Lüdecke.) One female.

Apparently this is the first exact record of the species from Brazil, in but the extreme southern portion of which it occurs.

Musoniella ipiranga new species (Plate X, figs. 2 and 3.)

Apparently allied to *M. brasiliensis* Giglio-Tos, described from Matto Grosso, Brazil,⁴ but differing in the markedly attenuate cephalic prozonal region, the more elongate tegmina, in the proximal infuscation of the transverse nervures of the tegmina, and

⁴ Bull. Soc. Entom. Ital., xlvii, p. 5, (1916).

doubtless other features of difference not discussed in the rather unsatisfactory, merely diagnostic description of *brasiliensis*. From *argentina*, the genotype, and *chopardi*, the remaining species of the genus, both of which are now before us, the present species is immediately separable by its more elongate pronotum, which shows a tendency toward *Musonia*.

Type.—♂; Ypiranga, State of São Paulo, Brazil. February, 1913. (H. Lüderwaldt.) [Acad. Nat. Sci. Phila., Type no. 5271.]

Size medium (for the genus): form elongate, slender. Head broad, the greatest width across the eyes equal to one and one-half times the supra-coxal width of the pronotum, the greatest depth of the head contained one and three-eighths times in the greatest width of the same; occipital line transverse subtruncate between the juxta-ocular sulci, which are well indicated and distinctly separate the rounded obtuse juxta-ocular lobes from the occiput proper, juxta-ocular sulci following the curve of the internal margins of the eyes and converging ventrad; ocelli large, prominent, placed in a triangle which is slightly deeper than broad; facial shield strongly transverse, its greatest depth contained two and one-half times in the greatest width, dorsal margin obtuse-angulate, the dorso-lateral angles rectangulate, the lateral margins slightly converging ventrad, the ventral margin faintly arcuato-emarginate, the surface of the plate subimpressed: eyes subglobose when seen from the dorsum, full and reniform in shape when seen from the cephalic aspect, in basal outline broad ovoid: antennae about two-thirds as long as the body, the articles moniliform, particularly distad. Pronotum moderately elongate, the greatest width across the supra-coxal expansion contained three times in the greatest length of the same; collar narrowing cephalad, the distal extremity rather narrowly rounded, the expansions very weak, rounded, shaft subequal in width, appreciably broader than the collar; lateral margins finely and rather distantly serrulate; shaft one and one-half times as long as the collar; medio-longitudinal carina distinct but not high, sub-obsolete cephalad; transverse impression arcuate, oblique lateral impressions on the collar distinct. Tegmina when in repose slightly surpassing the apex of the subgenital plate, broad, the greatest width, which is at the distal fourth, contained nearly four times in the greatest length of the tegmen; costal margin appreciably arcuate briefly proximad and distad, the apex rounded sub-acute: marginal field narrow; numerous cross nervures in the discoidal field with distinct thickening at their juncture with the main veins. Wings, when in repose, surpassing the apices of the tegmina by about two millimeters, the greatest width slightly less than one-half the length of the wing; costal margin straight except for a brief but distinct arcuation distad, where the margin rounds to the broadly rounded acute apex: ulnar vein biramous; transverse nervures in the vicinity of the humeral trunk and of the ulnar vein thickened as in the tegmina. Form of the supra-anal plate not clearly definable, in general transverse; cerci incomplete; subgenital plate

slightly transverse, broad scoop-shaped, the lateral margins converging distad to the base of the styles, which are simple, styliform, acute processes, parallel in disposition and with the margin between their bases weakly arcuate, the length of the styles but slightly less than half the length of the plate. Cephalic limbs moderately slender: cephalic coxae but slightly shorter than the pronotum; cephalic femora slightly longer than the pronotum, weakly compressed, the greatest depth of the femur contained about four and one-half times in the length of the same; discoidal spines four in number; external margin with five to six spines, of which the distal one is on the genicular lobe; internal margin with twelve spines, alternating large and small: cephalic tibiae (exclusive of the apical claw) two-fifths as long as the femora, straight, armed on the external margin with five spines, proximad of which is a considerable unarmed diastema, internal margin armed with ten spines, these increasing in size distad; cephalic tarsi with the metatarsi slightly longer than the tibiae, remainder of the tarsal joints together slightly longer than the metatarsi. Median and caudal limbs very slender and elongate, the median femora slightly longer than the length of the head and pronotum combined, the caudal femora when extended caudad slightly surpassing the apex of the abdomen, caudal metatarsi three-fourths as long as the pronotum, the remaining joints of the caudal tarsi not more than three-fifths as long as the metatarsus.

General color mummy brown on the head, russet on the thorax and limbs, passing into sayal brown on the abdomen, the tegmina and wings faintly washed with snuff brown. Ocelli deep, clear bay; eyes fuscous mottled with raw umber; eyes brussels brown, darkening distad. Pronotum weakly vermiculate with fuscous. Tegmina with the cross veins of the discoidal field and in the vicinity of the humeral trunk with the section adjacent to the main veins briefly lined with fuscous. Wings with the humeral trunk, the ulnar, axillary and anal veins with the cross veins in their vicinity lined as on the tegmina.

Length of body, 26 mm.; length of pronotum, 6; greatest width of pronotum, 1.9; length of tegmen, 21; greatest width of tegmen, 5.4; length of cephalic femur, 6; length of caudal femur, 10.

The type of this species is unique.

Stagmatoptera precaria (Linnaeus)

1758. [*Gryllus* (*Mantis*)] *precaria* Linnaeus, Syst. Nat., X ed., i, p. 426. ["America; Africa."]

Salto Grande, State of São Paulo. February, 1911. (H. Lüderwaldt.) One male.

This specimen is inseparable from the Misiones, Argentina male previously recorded by us,⁵ except that the tegmina and wings do not surpass the apex of the abdomen by more than a few millimeters, instead of by nearly half the pronotal length as in the other individual.

⁵ Proc. Acad. Nat. Sci. Phila., 1913, p. 299, (1913).

PHASMIDAE

Paraphasma paulense new species (Plate X, figs. 4 and 5.)

Apparently allied to *P. quadratum* (Bates), from Tapajos, Brazil, agreeing in the relatively long (for the genus) tegmina, but differing in the non-emarginate subgenital plate, the longer mesosternum and tegmina, although the body is of similar size, and in the generally blackish fuscous coloration with greenish venation and greenish points scattered along the tegminal veins.

Type.—♂; Cantareira, State of São Paulo, Brazil. February, 1914. (E. Garbe.) [Acad. Nat. Sci. Phila., Type no. 5347.]

Size medium: form moderately elongate: surface in general smooth. Head short, moderately broad, its greatest length faintly greater than the width across eyes; caudal portion of head slightly narrowing caudad of the eyes: ocelli well indicated, placed in a triangle: eyes prominent, slightly flattened subglobose when seen from the dorsum, nearly circular in basal outline: antennae slightly surpassing the apex of the abdomen when extended caudad, relatively heavy, segments, aside from the proximal few, very elongate. Pronotum very slightly shorter than the head, rectangulate, moderately longitudinal, the greatest width contained about one and one-half times in the length; cephalic margin arcuate-emarginate, caudal margin truncate, lateral margins weakly sigmoid; transverse impression arcuate, the curve caudad, median carina obsolete. Mesonotum one and one-half times as long as the pronotum, subequal in width except in the supra-coxal section, the general width contained about two and one-half times in the greatest length of the mesonotum, the surface with paired areas of subobsolete and rounded granulations, which have a generally longitudinal disposition. Tegmina elongate (for the group), in length equal to that of the pro- and mesonotum combined, in form acute elongate-elliptical, its greatest width (when normally arched) contained about twice in the length of the tegmen; margins regular except that the sutural margin near the spine is somewhat ampliate, more so on the left than on the right tegmen; apex rounded acute; spine produced, acute, directed laterad; venation prominent. Wings reaching to the apex of the sixth abdominal segment, when expanded broad, the width faintly greater than one-half the length of the wing; apex of the wings rounded rectangulate. Ventral surface of the head, prosternum, mesosternum and metasternum with a distinct, moderately continuous sulcus, which broadens out on the mesosternum into a concavity involving the whole plate: abdomen moderately depressed, the segments of moderate length; seventh dorsal abdominal segment somewhat broadened, with a distinct medio-longitudinal carination; eighth dorsal segment slightly shorter than the seventh segment, narrowing distad, the dorsal surface carinate, the distal margin with a broad, median, V-shaped emargination; ninth dorsal segment faintly shorter than the eighth segment, moderately

compressed and sub-rostrate, the distal margin truncate, faintly oblique, when seen from the side, the disto-ventral angle thickened and bent inwards, that region and the internal surface of the whole distal margin covered with sub-imbricated, shagreenous denticulations; cerci about as long as the ninth dorsal abdominal segment, simple, relatively thick, slightly inbent, tips blunt; subgenital opercule short, transverse, regularly arcuate, non-emarginate. Cephalic femora in length nearly equal to the combined length of the pronotum, mesonotum and tegmina, slender, cephalic flexure moderately indicated, occupying about two-fifths of the femoral length, carinations low; cephalic tibiae in length surpassing the femora by about two-thirds the length of the pronotum. Median femora short, faintly shorter than the combined length of the pronotum and mesonotum; median tibiae, subequal to the femora in length. Caudal femora reaching to the distal portion of the third abdominal segment; caudal tibiae subequal to the femora in length; caudal metatarsi about one-third as long as the tibiae, subequal to the remainder of the tarsal joints united.

General color mummy brown, becoming blackish fuscous on the prothorax and head, on the venter of the abdomen largely russet. Head with the post-ocular region bearing a single median and five lateral pairs of regularly distributed fine lines of tawny-olive, these represented on the pronotum by three lines and lateral blotches cephalad; eyes dresden brown blotched with dark chestnut brown; antennae blackish fuscous, the dorsal surface proximad weakly tawny-olive. Mesonotum with the lateral carinae and the granulations frosted with tawny-olive. Tegmina with the venation almost entirely lined with mignonette green, the spine blackish fuscous. Wings with the anterior field crossed obliquely by a cloud of poorly-defined ecru-olive, the whole anterior field with faint intimations of similar, but smaller, cloudings; posterior field of the wings infumate with bister. Abdomen with the dorsal surface clouded with bister. Femora with the carinae more or less distinctly lined with ecru-olive, the tibiae with but faint indications of the same; genicular extremities of the femora narrowly bordered with the same.

Length of body, 45.3 mm.; length of head, 3.5; length of pronotum, 2.7; length of mesonotum, 5; length of tegmen, 8; length of wing, 33; length of cephalic femur, 13.2; length of median femur, 7; length of caudal femur, 11.8.

The type is unique.

ACRIDIDAE

ACRYDIINAE

***Tettigidea multicostata* (Bolivar)**

1887. *T[ettigidea] multicostata* Bolivar, Ann. Soc. Entom. Belg., xxxi, p. 299. [Brazil.]

Estação Alto do Serra, State of São Paulo. January, 1909. (E. Schwebel.) One female.

PROSCOPINAE

Tetanorhynchus sublaevis Brunner

1890. *Tetanorhynchus sublaevis* Brunner, Verhandl. k.-k. zool.-botan. Gesell. Wien, xl, p. 105, pl. iv, figs. 5a to 5c. [Theresopolis, State of Santa Catharina, Brazil.]

Piquete, State of São Paulo. One male.

This specimen has the postocular section of the head slightly longer in proportion than in the male figured by Brunner, but as there is some variation in this respect in allied species we prefer to consider it an individual feature.

Cephalocoema costulata Burmeister

1880. *Cephalocoema costulata* Burmeister, Abhandl. Naturforsch. Gesell., Halle, xv, heft 1, p. 9, pl. I, figs. 5 to 7. [Argentina.]

Porto Alegre, State of Rio Grande do Sul. 1912. (P. P. Buck.) Three males, one female.

São Paulo, State of São Paulo. February 8, 1906: garden field; open woods. One male, one female.

Ypiranga, State of São Paulo. February, 1913. (H. Lüderwaldt.) One female.

These specimens all have the rostrum longer than material of both sexes from Cordoba and Carcaraña, Argentina, and males from Sapucay, Paraguay and Misiones, Argentina; females from the latter localities, however, agree with the Brazilian material in the relative length of this portion. Owing to the uncertain definition of a number of supposedly distinct species, i. e. *costulata*, *calamus*, *multispinosa* and *burmeisteri*, we prefer, for the present at least, to call the specimens recorded above, *costulata*. The differences given for these species may be racial, environmental or genetic, but we have not sufficient material or information to hazard an explanation along any one of these lines. We have already called attention to the variation found in the number of caudal tibial spines in this species.⁶

ACRIDINAE

(Truxalinae of most authors)

Hyalopteryx asinus Rehn

1906. *Hyalopteryx asinus* Rehn, Proc. Acad. Nat. Sci. Phila., 1906, p. 12, figs. 1 to 4. [São Paulo and Jundiáhy, State of São Paulo, Brazil.]

França, State of São Paulo. January, 1911. (E. Garbe.) One female.

⁶ Proc. Acad. Nat. Sci. Phila., 1907, p. 166, (1907).

This specimen is inseparable from the allotype (♀) of *asinus*, now before us. The size is, however, very slightly greater.

Hyalopteryx rufipennis Charpentier

1845. *Hyalopteryx rufipennis* Charpentier, Orthopt. Descr. et Depict., tab. 46. [Brazil.]

Paraná. (E. D. Jones.) Two males. [U. S. Nat. Mus.]

São Paulo, State of São Paulo. (Hempel.) One male. [Scudder Collection.]

These specimens are typical of the species, and apparently these are the first exact records of it from eastern Brazil.

Truxalis brevicornis (Johannson)

1764. *Gryllus brevicornis* Johannson, Amoen. Acad., vi, p. 398. [North America (Pennsylvania).]

Itatiba, State of São Paulo. April, 1910. (J. Lima.) One male.

Orphula pagana (Stål)

1860. *Gomphocerus (Hyalopteryx) paganus* Stål, Kong. Svenska Freg. Eugenies Resa, Zool., i, Ins., p. 339. [Rio Janeiro, Brazil.]

Itatiba, State of São Paulo. April, 1910. (J. Lima.) Two males, two females.

Estação Alto do Serra, State of São Paulo. January, 1909. (E. Schwebel.) Two males, one immature male.

We have straightened out the relationship and correct identity of this species in a recent paper.⁷ The species, as *Orphulina veteratoria*, has been recorded from the vicinity of São Paulo, taken in the month of September.

Orphulina veteratoria Rehn

1906. *Orphulina veteratoria* Rehn, Proc. Acad. Nat. Sci. Phila., 1906, p. 21, figs. 5 and 6. (In part: female only.) [São Paulo, Brazil.]

1906. *Orphulina oculta* Rehn, Ibid., p. 23, figs. 7 and 8. [São Paulo, Brazil.]

As we have shown elsewhere,⁸ the male of *veteratoria* equals *Orphula pagana*, then unrecognized, while the female, which at the time of description we felt might not represent the same species as the male, is the same as our *acuta*. As we stated, in the paper referred to, that in case the two sexes proved to be

⁷ Trans. Amer. Entom. Soc., xliii, p. 344, (1917).

⁸ Trans. Amer. Entom. Soc., xliii, p. 344, (1917).

different species we "would restrict the name *veteratoria* to the ♀," that sex must be considered the restricted type and *veteratoria* in consequence replaces the name *acuta*, over which it has page priority.

Orphulella punctata (DeGeer)

1773. *Acrydium punctatum* DeGeer, Mém. Hist. Ins., iii, p. 503, pl. 42, fig. 12. [Surinam.]

Itatiba, State of São Paulo. April, 1910. (J. Lima.) Five males, seven females.

Amblytropidia ferruginosa Stål

1873. *Amblytropidia ferruginosa* Stål, Recens. Orthopt., I, p. 107. [Brazil.

França, State of São Paulo. January, 1911. (E. Garbe.) One female.

This specimen agrees very fully with Stål's description of the fastigium, face, frontal costa, pronotum and tegminal form of his species, but is five millimeters longer and the antennae are no longer than the head and pronotum together. The differences in the specimen appear to us to be purely individual, particularly as there is as much size variation in a series of the allied *A. robusta*. The strongly impresso-punctate pronotal dorsum and subfoveolate face, as well as the transverse rugosity of the fastigium, appear to be characteristic of the species.

Bruner has recorded this species from Chapada, State of Matto Grosso.

Fenestra bohlsii Giglio-Tos

1895. *Fenestra bohlsii* Giglio-Tos, Zoolog. Jahrb., Abth. für System., viii, p. 807. [Paraguay.]

França, State of São Paulo. January, 1911. (E. Garbe.) One female.

This specimen is inseparable from individuals from Misiones, Argentina and Sapucay, Paraguay. This is the extreme north-eastern point from which the species is known. Northwestward it extends to Santa Cruz de la Sierra, Bolivia.

Scyllina instabilis Rehn

1906. *Scyllina instabilis* Rehn, Proc. Acad. Nat. Sci. Phila., 1906, p. 42, figs. 14 and 15. [São Paulo, Brazil.]

Estação Campo Grande, State of São Paulo. July, 1902. (M. Wacket.) One male.

Scyllina brasiliensis (Bruner)

1904. [*Plectrotettix*] *brasiliensis* Bruner, Biol. Cent.-Amer., Orth., ii, p. 100. [Southern Brazil.]

Estação Campo Grande, State of São Paulo. July, 1902. (M. Wacket.) One female.

OMMEXECHINAE

Ommexecha germari Burmeister

1838. *O[mmexecha] germari* Burmeister, Handb. der Entom., ii, abth. ii, pt. i, p. 655. [Brazil.]

Salto Grande, State of São Paulo. February, 1911. (H. Lüderwaldt.) One female.

This is the most northern definite locality in Brazil from which the species is known.

Ommexecha servillei Blanchard

1837. *Ommexecha servillei* Blanchard, Ann. Soc. Entom. France, v, p. 613, pl. xxii, figs. 2 and 3. [Province of Corrientes, Argentina.]

Salto Grande, State of São Paulo. February, 1911. (H. Lüderwaldt.) One male.

Itatiba, State of São Paulo. April, 1910. (J. Lima.) One male, one female, one immature male.

These specimens are in the brown phase. The species has been reported from as far northeastward as Rio de Janeiro.

Spathalium helios⁹ new species (Plate X, figs. 6 and 7.)

Apparently quite distinct from the other forms of the genus, being characterized by the great elevation of the prozonal section of the pronotal disk, the acute spiniform projections of the caudal margin of the pronotal disk and the strongly serrate character of the dorsal carina of the caudal femora. The strigose elevations of the metazonal disk are similar to those found in *S. hispidum*, but the other features given above are sharply differential.

Type.—♀; França, State of São Paulo, Brazil. January, 1911. (E. Garbe.) [Acad. of Nat. Sciences Phila., Type no. 5278.]

Size medium: general form as usual in the genus: surface of head, pronotum and limbs rugose to tuberculate. Head with the occiput moderately ascending cephalad; interocular section of the vertex very broad, equal to twice the depth

⁹ From 'ἥλιος, the sun, in allusion to the radiating points on the caudal margin of the pronotal disk.

of the eye, with a pair of transverse ridges, the caudal of which has high lateral spiniform and lower median paired tubercles; fastigium strongly compressed, sulcate, moderately declivent, the usual interantennal projection distinct but not strong: frontal costa sulcate, slightly wider for a distance ventrad of the median ocellus than dorsad of the same, the ventral half of the ventro-ocular section again widened and the immediately ventral portion sharply expanding, lateral carinae of the frontal costa developed into a pair of low, subspiniform lobes half way between the ocellus and the clypeal suture; genae roughened with a vertical obtuse-angulate impression; eyes globose, projecting, subcircular in basal outline; antennae depressed. Pronotum of the type found in nearly all of the species of this genus (i. e. all excepting *S. klugii*), the greatest width of the dorsum of the metazona subequal to the greatest length of the pronotal disk; cephalic margin of disk very weakly arcuate; caudal margin roughly arcuate; the cephalic margin unarmed; the caudal margin with three pairs of acute spiniform processes, the median pair quite long and all disposed at right angles to the margin proper; lateral carinae strongly indicated caudad of the median sulcus, sublamellate, serrato-dentate, produced laterad; surface of disk strongly scabrous, the lines of acute tubercles on the metazona radiating caudad and laterad; median carina caudad to the median sulcus elevated into a greatly inflated crest, which in height is nearly equal to the depth of the lateral lobes of the pronotum, when seen from the side this is roughly rounded in outline, slightly overhanging cephalad and caudad, and with its margin divided into three sections by irregular emarginations, lateral faces of this inflation covered with spiniform tubercles, median carina on the metazona subobsolete: lateral lobes of the pronotum with the greatest dorsal length very slightly greater than the greatest depth; cephalic margin of the lobes very weakly obtuse-angulate, ventro-cephalic angle nearly rectangulate, ventral margin sinuato-truncate, moderately oblique, ventro-caudal angle rectangulate, weakly produced, caudal margin somewhat oblique, nearly straight; surface of lateral lobes rugoso-tuberculate, these structures becoming linear in disposition caudad and there produced into spiniform projections, which, to the number of three or more, are strongly developed, near the cephalic margin of the lobes is present a median spiniform tubercle. Tegmina falling short of the apex of the abdomen, in fact not reaching the femoral apices, in length being hardly twice as long as the median line of the pronotal disk, lanceolate; marginal field moderately expanded at proximal third, narrowing distad; costal margin straight from the point of greatest width of marginal field to near the apex, where it is gently arcuate; sutural margin in general straight; apical margin acute with the immediate apex very narrowly rounded; texture of tegmina and areolation of the same as in the other species of the genus. Wings reduced, when in repose but slightly surpassing the middle of the tegmina. Prosternum with the projection of the cephalic margin erect, subspiniform, deplanate on the cephalic face; interspace between mesosternal lobes strongly transverse, shallow, the greatest width over twice as great as the greatest depth, lobes broadly rounded; interspace between the metasternal lobes distinctly greater than that between the mesosternal lobes, very shallow, the lobes rotundato-rectangulate, cephalic

margin of interspace arcuate. Ovipositor valves moderately compressed. Median femora with the ventral margin sublamellate and sinuate, the distal extremity of the femur much heavier than the proximal portion, cephalic and dorsal faces subcarinate. Caudal femora but slightly shorter than the tegmina, moderately compressed, dorsal margin with distinct serrate projections inclined distad; dorso-external carina with a similar median projection and proximad and distad other smaller but similar points, ventro-external carina with a median pair of serrate projections; external pagina with a close, impressed, sub-imbriate pattern of chevron-shaped figures; dorso-median and lateral genicular lobes produced, narrow: caudal tibiae robust, armed on the external margin with nine spines; caudal metatarsus slightly longer than the second and third tarsal joints together.

General color verona brown, paling to sayal brown on the pronotum, with certain pale areas on the lateral lobes of the pronotum and caudal femora, clay color. Eyes buckthorn brown, antennae of the general color. Pronotum with scattered lines of blackish on certain of the points; lateral lobes of pronotum with an irregularly indicated pale area ventro-caudad. Tegmina weakly lineate with bone brown along the principal veins and marmorate with the same in the median area of the tegmina, as commonly found in the genus, also distinctly painted with the same color on the rami of the disto-sutural section. Wings washed with blackish. Abdomen mars brown. Limbs of the general color; caudal femora with three transverse pale areas, irregularly outlined, but subchevron-shaped on the external face, the distal pale area distinctly indicated on internal face alone.

Length of body, 30 mm.; length of pronotum, 9.2; greatest width of pronotal disk, 9.3; length of tegmen, 16.8; greatest width of tegmen, 5.2; length of caudal femur, 15.4.

The type of this striking species is unique.

Parossa ampla new species (Plate X, figs. 8 and 9.)

Allied to *P. bimaculata* (Giglio-Tos), but differing in the blunter caudal angle of the pronotal disk, in the broader tegmina (see plate X., figs. 9 and 10) which are subequal in width to the greatest dorsal pronotal width, in the apical region of the tegmina being much less acute and rounded at the extreme apex instead of acuminate as in *bimaculata*, and in the shorter and blunter ovipositor jaws.

Type.—♀; França, State of São Paulo, Brazil. January, 1911. (E. Garbe.) [Acad. Nat. Sciences Phila., Type no. 5279.]

Size medium: form as usual in the genus: surface of the peculiar texture and with the usual vestiture found in the related *P. bimaculata*. Head as in *P. bimaculata*. Pronotum identical with that of *P. bimaculata* but with the caudal margin of the pronotal disk very broadly obtuse-angulate and hardly produced. Tegmina relatively broad, in greatest width subequal to the greatest caudal width of the pronotal disk; in length the tegmina surpass the apices of the

caudal femora by about the length of the pronotal disk: costal margin of the tegmina very faintly lobulate and subarcuate proximad, straight for the median three-fifths of the length, the distal extremity of this margin strongly arcuate to the narrowly rounded, but in general acute-angulate, apex, which is nearly sutural in position; sutural margin straight: reticulations of the tegmina fewer and more open than in *bimaculata*. Prosternal tubercle less elevated and less mamillate than in *bimaculata*. Ovipositor jaws shorter, more robust and less elongate than in *bimaculata*, the distal extremity of the dorsal valves more sharply upcurved, the ventral valves with the distal section more decurved. Limbs as in *bimaculata* but somewhat shorter; the caudal tarsi are also somewhat heavier.

Allotype.—♂; Same data as the type. [Acad. Nat. Sciences Phila.]

This sex differs from the male of *bimaculata* in the broader tegmina, which are slightly broader than the greatest (caudal) width of the pronotal disk; structure of the tegmina as in the type. Limbs agree with the description of the female.

General color lime green to light cress green, on the ventral surface and limbs passing to ecru olive or even old gold; tegmina washed in a tessellate pattern with pale green-yellow, the areas of the general color on the tegmina being relatively small, quadrate and evenly distributed. Usual spot at base of anal field of tegmina orange chrome. Wings with the veins of the anterior field washed with the general color, and of the remainder weakly lined with pale garnet brown. Eyes brussels brown (♀) to bay (♂). Antennae dull garnet brown. Caudal tibiae becoming more intense coral pink to light jasper red distad, the spines very narrowly black tipped. Vestiture whitish.

Measurements (in millimeters)

	<i>P. ampla</i>		<i>P. bimaculata</i>	
	♂	♀	♂	♀
	(allotype)	(type)	(Sapucay, Paraguay)	(Sapucay, Paraguay)
Length of body,	19.8	27.3	21.5	27.8
Length of pronotum,	5.4	6.7	5.3	7.3
Greatest caudal width of pronotal disk,	4	5	3.7	5.2
Length of tegmen,	20.3	24	21.4	27.3
Greatest width of tegmen,	4.1	4.6	3.4	4.5
Length of caudal femur,	12	13.5	12	15.5

In addition to the type and allotype we have examined a paratype female.

LOCUSTINAE

Procolpia emarginata (Serville)

1832. *Xiphicera emarginata* Serville, Ann. Sci. Nat., xxii, p. 271. [Brazil.]

Estação Piassaguera, State of São Paulo. December, 1910. (H. Lüderwaldt.) One female.

Brazil (no exact data). One male.

We wish to re-affirm our previously expressed opinion that *Procolpia minor* Giglio-Tos is a member of this genus and not of the genus *Munatia*, as considered by Bruner. We have compared the species with both sexes of the genotypes of the genera involved and find every tendency toward *P. emarginata*, aside from the acuminate tips of the tegmina and wings. In this latter feature, however, we note as discernible the oblique sutural emargination of *Procolpia*, while the characters of the rostrum, pronotum, the general pronotal form, and character, texture and general form of the limbs are more nearly those of *P. emarginata*, the genotype of *Procolpia*.

Diedronotus discoldeus (Serville)

1831. *Tropinotus discoldeus* Serville, Ann. Sci. Nat., xxii, p. 273. [Brazil.]

Porto Alegre, State of Rio Grande do Sul. June, 1912. (H. Lüdecke.) One female.

Itatiba, State of São Paulo. April, 1910. (J. Lima.) Two males.

Salto Grande, State of São Paulo. February, 1911. (H. Lüderwaldt.) One male.

This species ranges to the southward into northern Argentina, but is definitely known from but little to the northward of the São Paulo records.

Diedronotus regularis (Bruner)

1905. *Tropinotus regularis* Bruner, Entom. News, xvi, p. 214. [Sapucay, Paraguay.]

França, State of São Paulo. January, 1911. (E. Garbe.) Two females.

This is the most eastern record of the species, which was previously known only from the type locality and Chapada, Matto Grosso.

Elaeochlora viridicata (Serville)

1839. *Xiphicera viridicata* Serville, Hist. Nat. Ins., Orth., p. 614. [Buenos Aires, Argentina.]

França, State of São Paulo. January, 1911. (E. Garbe.) One male.

Porto Alegre, State of Rio Grande do Sul. June, 1912. One male.

This Porto Alegre male is very similar to topotypic males, except that the size is somewhat less and the tegmina and wings do not surpass the femoral apices. The caudal tibiae, however, show no red in their yellowish ground color. The França male is more similar to specimens from Sapucay, Paraguay and the Misiones, Argentina, which have been the subject of comment by us.¹⁰

***Elaeochlora arcuata* Rehn**

1908. *Elaeochlora arcuata* Rehn, Proc. Acad. Nat. Sci. Phila., 1908, p. 13, fig. 1. [Jundiáhy, State of São Paulo, Brazil.]

Salto Grande, State of São Paulo. February, 1911. (H. Lüderwaldt.) One male.

When compared with the type (♂) this specimen has the fastigium acute-angulate; more deeply sulcate and depressed transversely proximad, the tegmina are slightly more elongate and narrower, and the limbs are all appreciably more elongate. This is, however, no question in our mind of the identity of the specimen with *arcuata*.

This species is known only from the two localities.

***Chromacris miles* (Drury)**

1773. *Gryll[us] Loc[usta] miles* Drury, Illustr. Nat. Hist. Exot. Ins., ii, pp. 79 and Index, pl. xlii, fig. 2. [Bay of Honduras.]

Salto Grande, State of São Paulo. February, 1911. (H. Lüderwaldt.) One male.

França, State of São Paulo. January, 1911. (E. Garbe.) Two males, three females.

Porto Alegre, State of Rio Grande do Sul. June, 1912. Two females.

The Porto Alegre specimens have the pale markings orange rufous, as usual in the more southern individuals of the species; the Salto Grande individual has much more yellowish pale markings, while the França specimens have these markings decidedly yellow. In all the tegmina show a more or less distinct brick-red wash. The pale areas of the wings are brick-red in the Porto Alegre and Salto Grande specimens, a deeper and more intense red in the França representatives.

¹⁰ Proc. Acad. Nat. Sci. Phila. 1907, p. 174; Ibid., 1913, p. 331.

Zoniopoda tarsata (Serville)

1831. *Acridium tarsata* Serville, Ann. Sci. Nat., xxii, p. 283. [Brazil.]

França, State of São Paulo. January, 1911. (E. Garbe.)
One female.

This specimen is inseparable from other material of the species from several localities. The species has been definitely recorded from Rio de Janeiro and Jundiáhy, State of São Paulo, as well as the State of Rio Grande do Sul, Brazil.

Zoniopoda cruentata (Blanchard)

1846. *Acridium cruentatum* Blanchard, in D'Orbigny, Voy. dans l'Amér. Merid., vi, pt. ii, p. 216, pl. xxvii, fig. 5. [No locality.]

Porto Alegre, State of Rio Grande do Sul. June, 1912. One female.

It appears probable that *cruentata* and *tarsata* are merely geographic races of the same species, or even only environmental phases, but more material from other localities is necessary to clearly demonstrate the real relationship of the two. Typically they appear distinct and the series show fair geographic correlation, the more reddish *tarsata* to Brazilian localities, the more yellowish *cruentata* to Paraguayan and Argentinian localities. The presence of material (one male and one female) from La Cumbre, Province of Cordoba, Argentina, nearer *tarsata* than *cruentata* suggests, however, the possibility of environmental, instead of purely geographic or regional, influences being responsible for the color differences. Material from a number of localities and habitat information must be available to clear up this problem.

Zoniopoda hempeli Bruner

1911. *Zoniopoda hempeli* Bruner, Ann. Carneg. Mus., viii, p. 58 footnote. [São Paulo, Brazil.]

França, State of São Paulo. January, 1911. (E. Garbe.)
One female.

This specimen measures as follows: length of body, 36.5 mm.; length of pronotum, 9.2; length of tegmen, 31.7; length of caudal femur, 18.2. The species was previously known only from the original description, and in position it is very close to *iheringi* and *mimicula*.

Zoniopoda similis Bruner

1906. *Zoniopoda similis* Bruner, Proc. U. S. Nat. Mus., xxx, p. 652. [Sapucay, Paraguay.]

França, State of São Paulo. January, 1911. (E. Garbe.)
Three males, three females.

These specimens are slightly smaller than a number of topotypes of both sexes now before us. The species is now known from the two localities given above and Chapada, Matto Grosso, Brazil.

Prionacris erosa Rehn

1907. *Prionacris erosa* Rehn, Proc. Acad. Nat. Sci. Phila., 1907, p. 176, figs. 10 and 11. [Sapucay, Paraguay.]

França, State of São Paulo. January, 1911. (E. Garbe.)
One female.

This specimen is of almost the same dimensions as the female measured by Bruner.¹¹ The species is known only from the localities given above and Chapada, Matto Grosso, Brazil (Bruner).

Diponthus crassus Bruner

1910. *Diponthus crassus* Bruner, Entom. News, xxi, p. 303. [Puerto Bertoni, Paraguay.]

Porto Majoli, State of Paraná. October, 1910. (Schrottky.)
One female.

This specimen is badly shrivelled and discolored, but is clearly referable to this species, of which we have a topotypic male. This is the first Brazilian record of the species.

Leptysmia filiformis (Serville)

1839. *Opsomala filiformis* Serville, Hist. Nat. Ins., Orthopt., p. 593. [The North of the State of São Paulo, Brazil.]

Porto Alegre, State of Rio Grande do Sul. Two males.

Stenacris cylindroides (Stål)

1860. *Opsomala cylindroides* Stål, Kong. Svenska Freg. Eugenies Resa, Ins., p. 325. [Rio de Janeiro, Brazil.]

Porto Alegre, State of Rio Grande do Sul. June, 1912. One female.

This locality and Resistencia, Chaco, Argentina are the most southern localities from which the species is known.

¹¹ Ann. Carneg. Mus., viii, p. 62, (1911).

Cornops¹² politum (Bruner)

1906. *Paracornops politum* Bruner, Proc. U. S. Nat. Mus., xxx, pp. 662, 664. [Rio de Janeiro, Brazil.]

Ypiranga, State of São Paulo. April, 1910. (Lüderwaldt; at electric light.) One female.

This specimen is provisionally assigned here, as it has the tegmina longer in proportion than described, but our material of other species shows considerable individual variation occurs in this feature. When compared with *C. aquaticum*, with which Bruner compared this species, it is seen to be closely related, in fact *politum* may be merely a geographic race of *aquaticum*.

This specimen measures as follows: length of body, 27 mm.; length of pronotum, 5.6; greatest caudal width of pronotal disk, 3.9; length of tegmen, 26.2; length of caudal femur, 16.6.

Cornops ignotum new species (Plate X, figs. 11, 12 and 13.)

1906. *Paracornops longipenne* Bruner (not *Paracornops longipenne* (DeGeer)), Proc. U. S. Nat. Mus., xxx, p. 662. [São Paulo, Brazil.]

1908. *Paracornops longipenne* Rehn (not *Paracornops longipenne* (DeGeer)), Proc. Acad. Nat. Sci. Phila., 1908, p. 16. [São Paulo, Brazil.]

As we have shown elsewhere¹³ DeGeer's *longipenne*, from Surinam, is a species quite distinct from this, in fact nearest to *C. longicorne* (Bruner). The present author followed Bruner in using the DeGeerian name for this species. As we have not seen the allied *C. paraguayense* (Bruner), we are unable to say how this species differs from that form, but the difference between this species (as *longipenne*) and *C. dorsatum* (Bruner) has been mentioned in the description of the latter.

Type.—♂; São Paulo, State of São Paulo, Brazil. September 14, 1900. [Acad. Nat. Sci. Phila., Type no. 5283.]

Size slightly above the average for the genus; form as usual in the genus: surface of face, ventro-cephalic section of genae, pronotum and pleura rather thickly and regularly impresso-punctate. Head with normally exposed dorsal section but slightly more than two-thirds of the dorsal length of the pronotum; occiput and fastigium nearly flat when seen from the lateral aspect: interocular space no wider than broadest section of frontal costa; fastigium rectangulate when seen from the dorsum, finely but distinctly medio-longitudinally sulcate, margins slightly elevated; fastigio-facial angle when seen from the lateral aspect slightly rounded subacute, facial line from interantennal region very

¹² We have elsewhere (Trans. Amer. Entom. Soc., xlii, pp. 285, 286, (1916) shown that *Paracornops* Giglio-Tos equals *Cornops* Scudder.

¹³ Trans. Amer. Entom. Soc., xlii, pp. 286 & 287, (1916).

straight retreating; frontal costa moderately broad, considerably narrowed at the fastigio-facial angle, greatest breadth between the antennae, then very faintly narrowing ventrad, carinal margins of the costa almost reaching the clypeal sulcus, sulcus of costa extending from between the antennae ventrad for the full length, deep in the ocellar region, strongly punctate; supplementary facial carinae distinct, straight, moderately divergent ventrad: eyes moderately prominent, in length slightly more than that of the infra-ocular sulcus, in form ovate-reniform; antennae slightly longer than the combined length of the head and pronotum, rather heavy, proximad subdepressed. Pronotum subcylindrical, the greatest (caudal) width of disk contained about one and one-half times in the greatest dorsal length of the same; cephalic margin of disk arcuate with a shallow but evident median emargination; caudal margin arcuate obtuse-angulate; lateral shoulder rounded, although sub-evident on the metazona; median carina indicated although not clearly formed, and severed by three transverse sulci; lateral lobes longer than deep, ventral margin sub-truncate caudad, oblique subconcave cephalad, caudo-ventral angle broadly rounded. Tegmina elongate, surpassing the apex of the body by nearly the length of the head and pronotum, and of the caudal femora by almost the pronotal length; apex well rounded. Prosternal spine erect, subconical, blunted: interspace between the mesosternal lobes slightly longer than broad, slightly broader than a single lobe: metasternal lobes contiguous caudad. Supra-anal plate trigonal, faintly longer than proximal width, apex well rounded, cercal emargination of lateral margins of the plate distinct but not deep, rectangulate; proximal half of plate with a pair of median carinae, a latero-proximal tubercle and one at the cercal emargination, these as well as the paired carinae well elevated and black: cerci of the falcate type usual in the group, rather sharply bent falcate in form, the tip rather blunt, slightly incurved; subgenital plate strongly compressed, subrostrate disto-dorsad although little produced, distal face finely sulcate. Caudal femora about two-thirds as long as the body, moderately robust (for the genus), genicular lobes distinctly and sharply acute-angulate; caudal tibiae with seven spines on the external margin and ten on the internal margin, the distal half of the tibiae considerably expanded and the margins appreciably lamellate, with the fringing brushes of scattered but long hairs; caudal tarsi with the metatarsus and third joint subequal in length.

Allotype.—♀; Same data as type. [Acad. Nat. Sci. Phila.]

Differing from the male description as given below. Interocular space slightly wider than the broadest section of the frontal costa; fastigium slightly more than a right angle when seen from the dorsum. Tegmina apparently slightly shorter than in the male (apices broken). Dorsal ovipositor jaws with six teeth on lateral margins. Caudal tibiae with six spines on external margin.

General coloration of dorsal surface brussels brown to raw umber, darkening laterad over the dark bars until they are sharply seal brown where they meet the straw yellow to light ochraceous-buff of the lower genae, lower lateral lobes and ventral section of pleura. Venter of body buckthorn brown. Eyes cinnamon-brown; antennae of the dorsal color; face pale dull bistre to brownish olive.

Cephalic and median limbs dull tawny-olive, sometimes washed with greenish; caudal femora buckthorn brown to tawny; caudal tibiae bluish gray-green, on external face washed with the color of the femora, spines straw color, black tipped. Wings hyaline with fuscous veins, the latter whitish proximad.

Measurements (in millimeters)

	♂ (<i>type</i>)	♂ (<i>paratype</i>)	♀ (<i>allotype</i>)
Length of body,	20	21.9	25.2
Length of pronotum,	4.3	4.6	5.6
Greatest width of pronotum,	2.6	3	3.4
Length of tegmen,	20	22	22 (imperfect)
Length of caudal femur,	12.6	14	15.8

In addition to the type and allotype we have before us four male paratypes, taken the same date as the type. These specimens fully agree with the type in all important characters, although there is seen to be a great amount of individual size variation. One paratype is larger than the type and we have given its measurements above. The number of spines on the external margin of the caudal femora is seen to vary individually from six to seven.

Cornops dorsatum (Bruner)

1911. *Paracornops dorsatum* Bruner, Ann. Carneg. Mus., viii, p. 84. [Chapada, Matto Grosso, Brazil.]

Porto Majoli, State of Paraná. October to November, 1910. (Schrottky.) Two females.

This species is rather closely related to *C. ignotum*, but the differences are quite evident on close comparison.

The two localities given above are the only ones known for the species.

Abracris chapadensis (Bruner)

1908. *Omalotettix chapadensis* Bruner, Biol. Cent.-Amer., Orth., ii, pp. 280, 282. [Chapada, Matto Grosso, Brazil.]

França, State of São Paulo. January, 1911. (E. Garbe.) Two females.

The specimens are referred rather tentatively to this species, the only detailed description of which was based solely on a single male,¹⁴ although both sexes were indicated in the key there presented.¹⁵ At present we have males belonging to this species for

¹⁴ Ann. Carneg. Mus., viii, p. 109, (1911).

¹⁵ Ibid., p. 108.

examination. The species, as we understand it, is very close to *nebulosa*, from which it seems best separated by the shorter and broader fastigium, the less produced interantennal section of the frontal costa, the slightly greater interspace between the eyes, and the somewhat different shape of the ventral margin of the lateral lobes of the pronotum.

Of the series previously recorded by us, from Sapucay, Paraguay, as *signatipes*,¹⁶ four females should be referred to the present form and the remainder to *coeruleipennis*. The confusion of this material was responsible for the comment there made on the variability of the coloration of the ventro-external face of the caudal femora. As we have shown elsewhere, however, almost as great a degree of variation in this respect is found in *coeruleipennis*. The specimen from Misiones, later reported by us as *nebulosa*,¹⁷ was correctly associated, as an authentic pair loaned by Prof. Bruner shows.

***Osmilia violacea* (Thunberg)**

1824. *Gr[yllus] violaceus* Thunberg, Mém. Acad. Imp. Sci. St. Pétersb., ix, p. 413. [Brazil.]

Piracicaba, State of São Paulo. November, 1906. (J. Lima.)
One female.

This specimen is inseparable from Paraguayan and Misiones, Argentina material. We see no reason to separate Burmeister's *coelestre* from this species, or to replace Thunberg's name by the much later one. The distribution of this species appears to cover the region from eastern Peru and Ecuador, south through Bolivia and western Brazil to northern Argentina (Misiones, Jujuy, Tucuman and Chaco), east to the vicinity of Rio de Janeiro, Brazil. We have in addition records from Pará and Santarém, Brazil and Trinidad, but we suspect these may refer to specimens of *flavo-lineata* with a bluish green tint to the wing disks, such as we have recorded elsewhere from northeastern Brazil.¹⁸

¹⁶ Proc. Acad. Nat. Sci. Phila., 1907, p. 187, (1907).

¹⁷ Proc. Acad. Nat. Sci. Phila., 1913, p. 339, (1913).

¹⁸ Trans. Amer. Entom. Soc., xlii, p. 295, (1916).

Adimantus vitticeps (Blanchard)

1846. *Acridium vitticeps* Blanchard, in D'Orbigny, Voy. dans l'Amér. Merid., vi, pt. ii, p. 216, pl. xxvii, fig. 4. [No locality cited.]

França, State of São Paulo. January, 1911. (E. Garbe.) One female.

This individual has the pale facial markings of the same brilliant yellow which colors similar portions of the pattern on the occiput, genae and pronotum, instead of a generally deadened greenish tone, as in the other specimens seen. The wings are pale greenish hyaline, with no trace of the blue said to be found in *Burmeister's ornatissimus*. The caudal tibiae are solid carmine, with the black annuli incomplete and indicated only on the ventral and lateral faces. The pinkish red of the ventral apex of the abdomen and the ventral valves of the ovipositor is decided.

Zygoclistron trachystictum Rehn

1905. *Zygoclistron trachystictum* Rehn, Entom. News, xvi, p. 39, figs. 1, 2 and 3. [Sapucay, Paraguay.]

França, State of São Paulo. January, 1911. (E. Garbe.) Five males, two females.

These specimens are inseparable from material from the type locality. All the França individuals are very much duller than the Sapucay representatives, the yellow being less brilliant and more ochraceous, the dorsal color less rufous and the lateral bars and the abdominal coloration more umber. The size is also slightly less than in the Sapucay representation.

This is the first Brazilian record of the species, which was previously known from Sapucay, Paraguay and Santa Cruz de la Sierra, Bolivia (Bruner).

Homalosaparus canonicus Rehn

1908. *Homalosaparus canonicus* Rehn, Proc. Acad. Nat. Sci. Phila., 1908, p. 17, figs. 2 and 3. [São Paulo, Brazil.]

Estação Campo Grande, State of São Paulo. July, 1912. One female.

Schistocerca infumata Scudder

1899. *Schistocerca infumata* Scudder, Proc. Amer. Acad. Arts and Sci., xxxiv, pp. 444, 457. [Montevideo, Uruguay; Brazil.]

Ypiranga, State of São Paulo. July, 1913. (H. Lüderwaldt.) One female.

Dichroplus exilis Giglio-Tos

1894. *D[ichroplus] exilis* Giglio-Tos, Boll. Mus. Zool. Anat. Comp. Torino, ix, no. 184, p. 23. [Resistencia, Chaco, Argentina.]

Itatiba, State of São Paulo. April, 1910. (J. Lima.) Two males, one female.

This is the most northeasterly record of the species, which ranges south to the provinces of Chaco and Jujuy, Argentina, and west to Santa Cruz de la Sierra, Bolivia.

Dichroplus punctulatus (Thunberg)

1824. *Gr[yllus] punctulatus* Thunberg, Mém. Acad. Imp. Sci. St. Pétersb., ix, p. 408. [Brazil.]

Itatiba, State of São Paulo. April, 1910. (J. Lima.) One male, one female.

São Paulo, State of São Paulo. February, 1905. (H. Lüderwaldt.) One female.

Dichroplus bergii (Stål)

1878. *P[ezotettix] bergii*. Stål, Bihang K. Svenska Vet.-Akad. Handl., v, no. 9, p. 6. ["Buenos Aires, Paraná, Corrientes, Argentina."]

State of São Paulo. (Hammer Cln.). One male, one female. [Cornell University.]

Itatiba, State of São Paulo. April, 1910. (J. Lima.) Five females.

Porto Alegre, State of Rio Grande do Sul. June, 1912. (H. Ludecke.) One female.

All of the specimens from the State of São Paulo have purplish caudal tibiae. The Porto Alegre individual has them much darker bluish purple with the internal face spotted with dull ochraceous proximad.

TETTIGONIIDAE

PHANEROPTERINAE

Scaphura nitida Perty

1834. *Scaphura nitida* Perty, in Spix and Martius, Delect. Anim. Artic. Brasil., p. 121, pl. xxiii, fig. 12. [Mountains of Minas Geraes, Brazil.]

São Paulo. One female. [M. C. Z.]

This specimen is fully typical of the species, which has also been recorded from Cayenne.

Scaphura nigra (Thunberg)

1824. *Gr[yllus] niger* Thunberg, Mém. Acad. Imp. Sci. St. Pétersb., ix, p. 415. [Brazil.]

França, State of São Paulo. January, 1911. (E. Garbe.) Two females.

These specimens are quite ochraceous-rufescent, the only chalybeous area being the dorsal and dorso-lateral sections of the abdomen. In one the distal section of the caudal femora and caudal tibiae are ochraceous, in the other blackish.

Gymnocera lefebvrei Brullé

"1835. *Gymnocera lefebvrei* Brullé, Hist. Nat. des Ins., ix, p. 146. [Brazil.]"

São Francisco, State of Santa Catharina. November 11, 1900. One male.

We have been unable to examine the original description of this species, but the present individual fully agrees with the descriptions of Serville and Brunner. It seems probable to us that *lefebvrei* and *fasciata*, of each of which we have a specimen before us, are phases or chromatomorphs of a single species, similar in this respect to the allied *Scaphura nigra*.

This is the first exact record of the occurrence of the species.

Anaulacomera intermedia Brunner

1878. *A[naulacomera] intermedia* Brunner, Monogr. der Phaneropt., pp. 278, 283. [Brazil.]

Santos, State of São Paulo. April 1, 1912. (H. Lüderwaldt.) One female.

This specimen fully agrees with the original description and with a male individual recorded by us elsewhere.¹⁹ The vicinity of Rio de Janeiro and Santos are the only definite localities known for the species.

Anaulacomera sulcata Brunner

1878. *A[naulacomera] sulcata* Brunner, Monogr. der Phaneropt., pp. 279, 289. [Brazil; Peru.]

Ypiranga, State of São Paulo. February, 1913. (H. Lüderwaldt.) One male.

This species has been recorded from Goyaz, State of Goyaz, and Rio de Janeiro, Brazil.

¹⁹ Trans. Am. Ent. Soc., xliii, p. 354, (1917).

Grammadera janeirensis Bruner

1915. *Grammadera janeirensis* Bruner, Ann. Carneg. Mus., ix, p. 321. [Rio de Janeiro, Brazil.]

São Paulo, State of São Paulo. February, 1907. (H. Lüderwaldt.) One male.

This specimen fully agrees with all the important features of the original description, but shows a slight sulcation of the dorsal surface of the fastigium, a condition described as present in the female but absent in the male. We find, however, some variation in the intensity of this sulcation in the allied *G. hastata* Bruner, and think that in the forms with elongate fastigia this feature varies, and probably geographically, but our material is too scanty to be positive of the character of the variation.

The two localities given above are all known for the species.

Microcentrum lanceolatum (Burmeister)

1838. *Phylloptera lanceolata* Burmeister, Handb. der Entom., ii, abth. ii, pt. i, p. 692. [Brazil.]

Porto Alegre, State of Rio Grande do Sul. June, 1912. (H. Lüdecke.) One female.

This is, apparently, the most southern record known for this widely distributed species.

Microcentrum myrtifolium Saussure and Pictet

1898. *Microcentrum myrtifolium* Saussure and Pictet, Biol. Cent.-Amer., Orth., i, p. 359. [Brazil.]

Ypiranga, State of São Paulo. October, 1910. (H. Lüderwaldt.) One female.

This specimen fully agrees with the original description and is, apparently, the first individual of the species with full locality to be recorded.

PSEUDOPHYLLINAE

Meroncidius inornatus Walker

1870. *Meroncidius inornatus* Walker, Catal. Dermapt. Salt. Brit. Mus., iii, p. 453. [Montevideo, Uruguay.]

São João de Barra, State of Rio de Janeiro. 1912. (E. Garbe.) One female.

This specimen agrees with Walker's description, vague though his remarks are as a whole. The species is apparently related to *M. intermedius* Brunner,²⁰ described from Rio de Janeiro, Theres-

²⁰ Monogr. der Pseudophyll., p. 150, pl. vi, fig. 66, (1895).

opolis, Canto Gallo and Bahia, Brazil, and Cayenne, in fact the two may be inseparable, although Brunner's species has a deeper ovipositor (5 instead of 4.5 mm.) and longer tegmina (47 instead of 39.6 mm.), while the other proportions are the same or very similar. The tegmina show small areas of fuscous at the sources of transverse nervures in the discoidal field, while in *intermedius* the tegmina are described as unicolorous. Further material will be necessary to show the proper relationship of the two names. Brunner, as usual, completely ignored the Walkerian species.

COPIPHORINAE

Neoconocephalus irroratus (Burmeister)

1838. *C[onocephalus] irroratus* Burmeister, Handb. der Entom., ii, abth. ii, pt. i, p. 705. [Brazil.]

Ypiranga, State of São Paulo. May, 1913. (Dr. H. Von Ihering.) One male.

The present specimen, which has been compared with Petropolis material, is in a decided brown phase of coloration, with the tegmina thickly mottled with fuscous.

The species has been recorded from a number of localities in southern Brazil.

Neoconocephalus vicinus Karny

1907. *Neoconocephalus vicinus* Karny, Abhandl. k.-k. zool.-botan. Gesell. Wien, iv, heft 3, pp. 26, 34. [Rio Grande do Sul (Brazil); Paraguay.]

França, State of São Paulo. January, 1911. (E. Garbe.) One female.

This specimen has been compared with material from Chapada, Matto Grosso, Brazil and Sapucay, Paraguay.

Homorocoryphus kraussi (Redtenbacher)

1891. *Conocephalus kraussi* Redtenbacher, Verhandl. k.-k. zool.-botan. Gesell. Wien, xli, pp. 384, 420. [Theresopolis and Rio Grande do Sul, Brazil.]

Porto Alegre, State of Rio Grande do Sul. June, 1912. One male.

Bucrates lanista new species (Plate X, figs. 14, 15, 16 and 17.)

Differing from the two other known species of the genus²¹ in

²¹ We have shown elsewhere (Trans. Amer. Entom. Soc., xliii, p. 116, (1917)) that *Bucrates cocanus* Bolivar was founded on the male sex of *Parabucrates brevicauda* (Scudder). Stoll's *Locusta falx* (Natuur. Afbeeld. Beschr. Spoken, etc., Zabel-en Trekspr., p. 28, pl. xiiia, fig. 54, reg. p. 11, (1813))

the following features. From *capitatus* (De Geer) in the slightly more compressed form, narrower and deeper fastigium, less inflated face and genae, in the eyes having their outline more truncate cephalad and less evenly circular, in the shorter pronotal disk, in the proportionately longer and more shallow lateral lobes of the pronotum, in the very elongate tegmina and wings, the much more slender caudal femora and in the more sharply angulate-emarginate subgenital plate of the female. From *clausus* (Scudder) the new species differs in the more robust form, in the shorter and broader face and mouth-parts, in the non-ascendent fastigium, in the subtruncate caudal margin of the pronotal disk, in the much longer and more shallow lateral lobes of the pronotum (these being distinctly deeper than long in *clausus*), in the finer tegminal texture, in the longer and more slender femora, the longer ovipositor and the deeply (instead of extremely weakly) angulate-emarginate female subgenital plate.

Type.—♀; Porto Alegre, State of Rio Grande do Sul, Brazil. June, 1912. [Acad. Nat. Sci. Phila., Type no. 5324.]

Size large: form moderately robust (more slender than in *B. capitatus*, more robust than in *clausus*), elongate: surface of head and pronotum more or less finely punctate; tegmina closely punctato-reticulate proximad, becoming irregularly reticulate distad. Head with its exposed dorsal surface equal to twice the length of the dorsum of the pronotum; face distinctly retreating from dorsal surface of the fastigium to clypeal suture, three-fourths as long as the dorsum of the pronotum: fastigium broad, its greatest width slightly more than the greatest dimension of the eye, its greatest length hardly more than one-half its greatest width, distinctly but not greatly narrowed proximad, the cephalic outline, when seen from the dorsum, being arcuate obtuse-angulate; when seen from the side the fastigium is not elevated dorsad of the general line of the head; cephalic face of the fastigium slightly more acute than a right angle ventrad, the tip well in contact and imbedded in the fastigium of the face: eyes little prominent in basal outline, broad ovoid, the cephalic section of the outline appreciably oblique and flattened: antennae broken. Pronotum rotundato-deplanate dorsad, the greatest caudal width of the dorsum equal to two-thirds that of the greatest length of the same: cephalic margin of the disk faintly sinuato-truncate; caudal margin of same truncate, rounding laterad to the

has some resemblance to the species here described, but the features of the eyes, the presence of dark pronotal bars and the general curve of ovipositor (although this is exaggerated in the figure) convince us he had *capitatus* before him, his name accordingly falling in the synonymy under DeGeer's species. The color shade described and painted by Stoll is, also, very different from that found in the two individuals of *lanista*.

humeral sinus; lateral shoulders weakly indicated caudad, broadly rounded elsewhere; transverse sulcus placed slightly cephalad of the cephalic third; lateral lobes of the pronotum longer than deep; cephalic margin of the lobes straight oblique, ventro-cephalic angle rounded obtuse; ventral margin straight, weakly oblique, ventro-caudal angle broad obtuse; caudal margin with the ventral two-thirds oblique, moderately arcuate, sharply blending into the rounded obtuse-angulate, but distinct, humeral sinus. Tegmina slightly more than twice as long as the caudal femora, falling slightly short of the apex of the ovipositor, elongate lanceolate, the greatest width of the marginal and discoidal fields contained about seven times in the greatest length: costal margin straight, except for a short proximal and more gradual distal arcuation, sutural margin faintly sinuate, apex rather narrowly rounded. Wings reaching to the tegminal apices. Prosternum long bispinose: mesosternal lobes acute angulate: metasternal lobes rectangulate, none of the angles produced. Disto-dorsal abdominal segment divided mesad by an impressed fold (proximad) and a deep V-emargination (distad), the margin produced into spiniform lobes on each side of the median impression; supra-coxal emarginations very deep, arcuate: cerci tapering, acute, weakly arcuate: ovipositor moderately elongate, nearly a fourth longer than the caudal femora, straight except for a faint distal decurvature, faintly narrowed distad of the proximal third, this due to an offset of the cephalic margin, subequal in width thence, except that there is an almost imperceptible widening toward the distal fourth; apex moderately acute, ventral valve falling considerably short of the apex: subgenital plate with the distal margin V-emarginate mesad, this flanked by acute spiniform angles; lateral margins of the plate straight, converging distad to the processes margining the distal emargination. Cephalic and median femora relatively short, robust, the former slightly shorter than, and the latter subequal to, the length of the pronotal disk; cephalic femora with two teeth distad on the ventro-cephalic margin; median femora with the ventro-cephalic margin bearing three spines distad. All genicular lobes more or less distinctly spined except the cephalic lobe of the cephalic femora. Caudal femora slender, ventro-external margin with eight to nine spines, internal margin with seven to eight spines: caudal tibiae with the dorsal surface distinctly expanding distad.

The coloration has apparently altered somewhat in drying, but we are giving it as found. General color old gold, becoming dull wax yellow on the pronotum, primuline yellow on the pronotal disk. Head tinted with yellow citrine, with mouth-parts dull primuline yellow, a spot at each lateral base of the clypeus vandyke brown; eyes old gold, crossed by two lines of fuscous, which are connected caudad. Pronotum with a narrow cephalic marginal band and three broader caudal areas, one on the disk and one on each lateral lobe, of hellebore green. Tegmina with the anal and discoidal fields washed with saccardo's umber, the vicinity of the humeral trunk proximad yellow ocher, of the anal vein more russet; marginal field washed with veronese green, with a cloud of bice green, costal margin of this field veronese green to naples yellow. Cephalic tibiae with the usual black areas adjacent to the foramina distinct; median tibiae with a single median and paired lateral dots of fuscous. All spines

of the femora and of the dorsal margins of the caudal tibiae tipped with blackish fuscous, those of the ventral margins of the caudal tibiae paler fuscous tipped. Ovipositor largely mars brown, with a pale medio-longitudinal line, dorsal base pale.

Measurements (in millimeters)

Porto Alegre, Brazil.	Length of body (ex- clusive of ovi- positor)	Length of pronotum	Greatest (caudal) width of pronotal disk	Length of tegmen	Greatest width of tegmen (excluding anal field)	Length of caudal femur	Length of ovipos- itor
♀ type	42.5	10.5	6.7	55	8	26	29.5
♀ paratype	41	10.5	6.9	53.5 ²²	7.3	26.5	37 ²²

A paratypic female bearing the same data as the type shows no important differences, except that the ovipositor is longer and more decidedly decurved in over half its length. The cephalic femora of the paratype have one or no spine, the median femora two or three, while the single caudal femur remaining has seven external and six internal spines. The coloration of the paratype is apparently altered, as it shows no greenish at all, and presumably the individual has been immersed in a liquid preservative at some time.

AGROECIINAE

Bertoniella agroecioides Rehn

1911. *Bertoniella agroecioides* Rehn, Entom. News, xxii, p. 255, figs. 3 to 5. [Puerto Bertoni, Paraguay.]

Porto Majoli, State of Paraná. December, 1910. (Schrottky.) One female.

When compared with the allotypic female this specimen is seen to differ only in the faintly more elongate pronotum and the faintly shorter tegmina. These differences, however, are purely individual.

GRYLLIDAE

GRYLLINAE

Nemobius hebardi Rehn

1915. *Nemobius (Argizala) hebardi* Rehn, Proc. Acad. Nat. Sci. Phila., 1915, p. 290, figs. 4 and 5. [Buenos Aires (type) and Misiones, Argentina.]

São Paulo, State of São Paulo. January 29. One female.

This specimen has been compared with the type and paratypes of the species. It demonstrates the presence of a brachypterous condition in *hebardi*, as the tegmina cover but little more than

²² Approximate as tips are damaged.

half of the abdomen and the wings are vestigial. This is the most northern known record for the species.

Anurogryllus muticus (DeGeer)

1773. *Gryllus muticus* DeGeer, Mém. Hist. Ins., iii, p. 520, pl. 43, fig. 2. [Surinam.]

Ypiranga, State of São Paulo. April 10 to November, 1910. (H. Lüderwaldt.) Ten females.

All of these individuals have caudate wings.

Gryllus assimilis (Fabricius)

1775. [*Acheta*] *assimilis* Fabricius, Syst. Entom., p. 280. [Jamaica.]

Salto Grande, State of São Paulo. February, 1911. (H. Lüderwaldt.) One female.

OECANTHINAE

Ectecous hedyphonus Saussure

1878. *E[ctecous] hedyphonus* Saussure, Mélang. Orthopt., ii, fasc. vi, p. 555. [Brazil.]

Santos, State of São Paulo. August, 1910. (H. Lüderwaldt.) Two males.

We have also seen a specimen from the collection of the Museum of Comparative Zoology, labelled "Mendez, Thayer Exp.," but we are unable to place the locality. When compared with a male of *cantans* Saussure, from "Southern British Guiana," in the collection of the Academy, the more evident features of difference appear to be the generally smaller size of *hedyphonus*, and the less strongly transverse speculum of the male tegmina of the sex; the transverse veins of the speculum in *hedyphonus* are more oblique and regularly spaced at their junction with the juxta-humeral portion of the specular margin, while in *cantans* they are more transverse, and at their junction with the same margin they are more bunched. The number of these veins varies from three to four, while the number of oblique veins in *hedyphonus* is seven to eight, and in our *cantans*, four to six.²³ Bruner²⁴ was correct in removing Giglio-Tos' *Ectecous borellii* from this genus. We have a paratype pair (San Francisco, Bolivian Chaco), received from Borelli, and the species has no affinity with true *Ectecous*. It appears, instead, to belong in or

²³ We have used material of *cantans* from other localities, to be recorded later, in securing these counts.

²⁴ Ann. Carneg. Mus., x, p. 389, (1916).

very near to Saussure's *Prosthacusta*, which was based on *P. mexicana* Saussure (*Nemobius circumcinctus* Scudder). Until we are able to compare the two species we prefer to place *borellii* at least tentatively in *Prosthacusta*. Giglio-Tos' species is markedly different from the genotype, but in the important generic features it seems to fully agree. Bruner has referred *borellii* to Walker's *Luzara*, but we are not able to form any clear idea of this genus from Walker's description, while Kirby, from type examination, considers it a distinct genus related to *Paragryllus* and *Ectecous*, where *borellii* certainly does not go. We state this with the genotypes of both genera before us. Bruner's *Luzara boliviana* is extremely close to, if not identical with, *borellii*, a possibility he refers to in the original description.

Endecous itatibensis new species (Plate X, figs. 18, 19, 20, 21 and 22.)

This species is referred to *Endecous* with some doubt, as it has the dorsal surface of the caudal metatarsi biserially serrulate, and the median tibiae have four distal spurs, instead of the former being uniserially serrulate and the latter with three spines, which are supposed to be characters of *E. arachnopsis*, the genotype. However, the agreement of most of the other characters is such that we do not feel warranted in generically separating this species without more knowledge of the genotype. From the description of *arachnopsis* the present species differs in the much more elongate tegmina of the male, in the mediastine vein of the same having a number of rather weak branches, in the larger size and in the distal spine of the dorso-internal margin of the caudal tibiae being but slightly smaller than the others in the series, instead of very small.

From the species *E. lizeri*, which is being described elsewhere by us, the present species differs in its smaller size, more ample tegmina with more usual and regular venation, in the less projecting lateral lobes of the pronotum, in the less extensive subgenital plate of the male, and in the less attenuate and more expanded distal palpal joint. The female of *itatibensis* is not known.

Type.—♂; Itatiba, State of São Paulo, Brazil. April, 1910. (J. Lima.) [Acad. Nat. Sci. Phila., Type no. 5329.]

Size medium: form faintly compressed, abdomen cylindrical: surface in general smooth with a greater or lesser degree of adpressed pubescence, the dorsum of the pronotum, the occiput and the genae freer from this covering than the other portions of the body, the cephalic margin of the pronotal disk and the interantennal region with elongate bristle-like hairs. Head short, broad and relatively deep: occiput with its more elevated section short, thence cephalad the occiput is very declivent to the relatively narrow fastigium, which is low, narrow and bearing, on a level with the dorsal base of the antennae, the median ocellus: palpi elongate, very slender; third joint subequal in length to the fourth joint, the fifth joint faintly more than half again as long as the fourth joint, moderately arcuate, gently expanding in distal three-fifths, thence narrowing to the narrowly rounded apex: eyes ovoid in basal outline, their depth subequal to that of the infra-ocular portion of the genae, moderately prominent when seen from the dorsum: antennae elongate, about twice as long as the body, the proximal joint large, very strongly depressed. Pronotum, when seen from the dorsum, having its disk transverse subquadrate, slightly broader caudad than cephalad, the greatest length of the disk contained one and one-half times in the greatest width of the same; cephalic and caudal margins of disk subtruncate; median line with a sulcation which encloses an irregular carina, while caudad a transverse subelliptical area crosses the median line; lateral angles of the disk very broadly rounded: lateral lobes shallow, the greatest (cephalic) depth of the same contained about twice in the length of the lobes; ventro-cephalic angle broadly rounded, ventral margin ascending oblique-arcuate, ventro-caudal angle obsolete, the ventral margin regularly arcuate into the caudal margin of the disk; caudal half of the lateral lobes moderately impressed. Tegmina covering slightly more than the proximal half of the abdomen, dorsal field relatively broad, its greatest width contained about one and one-half times in the tegminal length: lateral field regularly narrowed distad; discoidal vein closely paralleling the humeral vein, bearing about nine poorly defined rami, which are elongate sigmoid proximad and angularly broken distad, a weakly indicated spurious vein connecting the veins at the point of fracture; humeral vein strong, gently arcuate except for a short distal section which is diverted toward the margin: discoidal vein distinct, gently arcuate in a reverse fashion from the humeral vein, the discoidal almost touching the humeral vein proximad; median vein weak; stridulating vein relatively weak, closely proximal in position on the tegmina, its transverse section gently arcuate; axillary veins two in number, converging toward the anal node; principal oblique vein straight oblique from the node to the periphery of the speculum, accessory oblique veins four in number; postaxillary veins two in number, longitudinal; diagonal vein short, sinuate, connecting the first postaxillary vein with the speculum: general form of the speculum circular-ovoid, the narrow portion directed proximad, the transverse veins two in number, regularly spaced, the proximal portion of the veins being sharply right-angled: distal margin of dorsal field in general form convex, but with three slight flattenings, one mesad and the others laterad. Wings aborted, not evident. Supra-anal plate moderately elongate, rounded trigonal, the lateral margins slightly constricted mesad and with the apex broadly rounded; surface of plate distinctly depressed

within its margins: cerci elongate, equal to the body in length, tapering; subgenital plate short, scoop-shaped, the distal margin narrowly V-emarginate, this giving the caudal aspect of the plate a reversed "hair-lipped" appearance. Cephalic and median femora subequal in length, each twice as long as the pronotal disk: cephalic tibiae with the cephalic face bearing a small elliptical tympanum, the caudal face imperforate. Caudal femora but faintly shorter than the body, robust, rather sharply tapering to the relatively small but abbreviate distal extremity: caudal tibiae very faintly longer than the femora, the dorsal margins with four pairs of articulate spines, which are not directly opposite one another in position, the external ones the longer and all faintly arcuate, dorsal margins distinctly spinoso-serrate between the articulate spines, the external margin formula reading distad (from area bearing large spines only) IiiiiIiiiiIiI, the external margin formula reading IiiiIiiiIiI; distal internal spurs with the dorsal one very long and acuminate, reaching slightly distad of the middle of the metatarsus, the median one slightly shorter than the dorsal one, the ventral one quite short, distinctly less than one-half as long as the median one; distal external spurs with size gradation as in the internal series, but the length of all distinctly less than in the other series: caudal metatarsi biseriate serrulate dorsad, the external and internal margins each with seven spinulations, the disto-internal spur about one-half again as long as the external one.

General color kaiser brown to ochraceous-tawny (on lower head, mouth-parts, palpi and coxae), the abdomen mummy brown, the tegmina pale chestnut-brown; cerci passing from mummy brown (proximad) to ochraceous-tawny; antennae (exclusive of proximal joint) chestnut-brown proximad, narrowly buffy annulate, to ochraceous-tawny distad; eyes pale olive brown.

Length of body, 19 mm.; length of pronotum, 3.5; greatest (caudal) width of pronotum, 4.1; length of tegmen, 8.2; greatest width of dorsal field of tegmen, 5.7; length of caudal femur, 12.5; length of caudal tibia, 13.3.

The type of this most interesting species is unique.

ENEOPTERINAE

Tafalisca paulista new species (Plate X, figs. 23, 24 and 25.)

Apparently related to *T. brasiliana*, from "Brazil," and *bahiensis*, from northeastern Brazil, differing from *brasiliana* in the much more elongate, more slender caudal tibiae, in the spining of the caudal metatarsi, in the acute apex of the ovipositor, in the largely infusate pronotum, in the pencilling of the tegminal venation and the coloration of the limbs; from *bahiensis* the new species differs in the more elongate limbs, particularly the caudal pair, the smaller apex of the caudal femora, the much more elongate caudal tibiae, the more compressed head and pronotum, the latter in consequence more longitudinal, the relatively broader

eyes, the infusate pronotum and longitudinal fuscous lining of the caudal femora.

Type.—♀; França, State of São Paulo, Brazil. January, 1911. (E. Garbe.) [Acad. Nat. Sci. Phila., Type no. 5337.]

Size rather large: form slender (for the genus), subcompressed: surface covered with adpressed golden pile. Head with its caudal width subequal to the cephalic width of the pronotum, greatest depth of the head nearly one and one-half times the greatest width of the head across eyes: occiput rather strongly inflated and rounded, strongly arcuate declivent to the interocular region, which is hardly produced or angulate when seen from the side, in width slightly less than that of the proximal antennal joint; median ocellus poorly indicated; facial section of the rostrum weakly compressed: eyes but little prominent, rather small, broad ovoid in basal outline, their depth but slightly greater than that of the infra-ocular portion of the genae: palpi elongate, slender, the third and fourth joints subequal in length, the fourth more slender, particularly proximad, than the third joint; fifth joint subequal in length to the fourth joint, infundibuliform, very broadly arcuate, the distal margin strongly oblique, arcuate, the immediate apex blunted: antennae nearly three times as long as the body; proximal segment inflated on the ventral surface. Pronotum strongly arcuate dorsad in transverse section, broadly rounding into the lateral lobes, greatest median length of the pronotum subequal to the greatest caudal width: cephalic margin of disk strongly and regularly arcuato-emarginate; caudal margin rather strongly arcuate; lateral borders of disk faintly converging cephalad: lateral lobes of pronotum longitudinal, the greatest depth caudad and this contained twice in the length of the lobes; ventro-cephalic angle rather broadly rounded; ventral margin straight, slightly declivent; ventro-caudal angle broadly rounded rectangulate, the lobes moderately impressed ventro-caudad: all margins of the pronotum cingulate, the ventro-caudal section of the lobes broadly so. Tegmina reaching to the apex of the abdomen: lateral field broad, its greatest width contained not quite four times in the tegminal length, full, the costal margin arcuate; mediastine vein with four rami, the field with three proximal free veins; humeral vein simple, following the curve of the mediastine vein: dorsal field subequal in width to the lateral field; median vein with three sublongitudinal rami distad, the median origin of which is not sharply indicated; ulnar vein biramose; anal vein simple; axillary veins four in number, all the veins and rami of the dorsal field parallel, but weakly oblique, cross-veins indicated, and then but weakly, distad and mesad. Wings surpassing the closed tegmina by nearly three-fifths the pronotal length. Ovipositor three-fourths the length of the caudal femora, gently arcuate in lateral outline, depressed; distal valves faintly wider than the main shaft of the ovipositor, the base of the dorsal valves indicated by a very weak, transverse carina, the external margin being weakly toothed at the marginal end of the carina, external margins of the dorsal valves regularly arcuate-convergent from the middle to the acute apices of the valves, the distal third of the surface of the valves transversely scored, this area obliquely delimited mesad and causing the external margin to be finely crenulate: ventral valves of approximately the same length and shape as the dorsal

valves, with the external margins more decidedly crenulate mesad and the ventral surface smooth: cerci two-thirds as long as the caudal femora, tapering, clothed with a thick coat of short, adpressed hairs and numerous erect, much longer hairs. Cephalic and median limbs robust, moderately compressed: cephalic femora but slightly longer than the dorsal length of the pronotum, median femora subequal in length to the cephalic femora: cephalic tibiae about a fourth longer than the femora, imperforate. Caudal limbs rather slender (for the genus): caudal femora nearly as long as the tegmina, surpassing the apex of the abdomen by about half the median length of the pronotum, the greatest depth of the femora contained three and one-half times in the greatest length of the same; the femoral form rather regularly tapering from the proximal third to the apex: caudal tibiae very faintly longer than the caudal femora, rather heavy: dorsal margins armed with five major spines, those of the internal margin much longer than the external spines; intercalated spinulations of external margin—3-2-2 (or 1)-1, of internal margin—3 (or 2)-3 (or 2)-3 (or 2)-2; dorsal disto-internal spur slightly over twice the length of the ventral one: caudal metatarsi rather short, armed on each dorsal margin with two spinulations; metatarsal spur elongate, reaching nearly to the middle of the third tarsal joint.

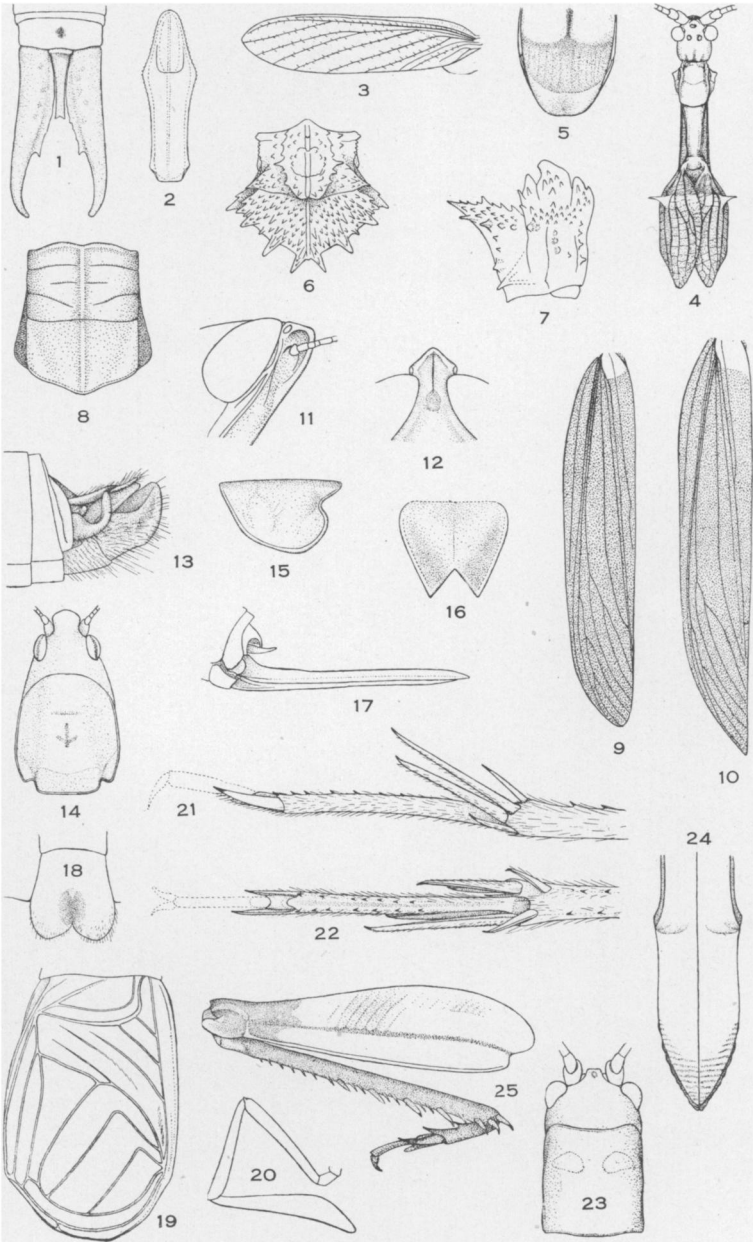
General color dull ochraceous-buff, marked with fuscous as follows: paired, weakly colored and poorly defined areas dorso-caudad of the eyes; the whole of the pronotal surface excepting the narrow ventral section of the lateral lobes and a faint tawny lining along the medio-longitudinal line; a weak infuscation proximad on the humeral trunk; a genicular darkening on the cephalic femora and median femora and tibiae; a narrow medio-longitudinal line on the external face of the caudal femora, a proximal, a more distinct median cloud on the dorsal surface of the same and a decided distal infuscation; caudal tibiae and two proximal tarsal joints fuscous, except for a pale area proximo-dorsad on the tibiae. Eyes mars brown; antennae pale sanford's brown. Venation of the tegmina pencilled with ferruginous to bay. Ovipositor chestnut, lined on external face with black, these covering the greater portion of the valves. Caudal tibiae with the spines dull burnt sienna, at the bases and the tips washed with blackish-fuscous. Abdomen with the dorsal surface blackish fuscous.

Length of body, 23 mm.; length of pronotum, 4.7; greatest (caudal) width of pronotum, 4.3; length of tegmen, 16.2; length of caudal femur, 19.6; length of ovipositor, 10.2.

The type of this most interesting and strongly characterized species is unique.

EXPLANATION OF PLATE X

- Fig. 1.—*Strongylopsalis iheringi* new species. Dorsal outline of disto-dorsal abdominal segment, pygidium and forceps of male (*type*). ($\times 5\frac{1}{2}$)
- Fig. 2.—*Musoniella ipiranga* new species. Pronotum of male (*type*). Dorsal outline. ($\times 4$)
- Fig. 3.—*Musoniella ipiranga* new species. Tegmen of male (*type*). ($\times 1\frac{1}{2}$)
- Fig. 4.—*Paraphasma paulense* new species. Head, pronotum, mesonotum and tegmina of male (*type*). Dorsal view. ($\times 2$)
- Fig. 5.—*Paraphasma paulense* new species. Subgenital plate of male (*type*). (Greatly enlarged.)
- Fig. 6.—*Spathalium helios* new species. Dorsal view of pronotum of female (*type*). ($\times 2$)
- Fig. 7.—*Spathalium helios* new species. Lateral view of pronotum of female (*type*). ($\times 2$)
- Fig. 8.—*Parossa ampla* new species. Pronotum of female (*type*). Dorsal view. ($\times 3$)
- Fig. 9.—*Parossa ampla* new species. Tegmen of female (*type*). ($\times 2$)
- Fig. 10.—*Parossa bimaculata* (Giglio-Tos). Tegmen of female. Sapucay, Paraguay. [A. N. S. P.] ($\times 2$)
- Fig. 11.—*Cornops ignotum* new species. Lateral view of fastigium of male (*type*). (Greatly enlarged.)
- Fig. 12.—*Cornops ignotum* new species. Dorsal view of fastigium of male (*type*). (Greatly enlarged.)
- Fig. 13.—*Cornops ignotum* new species. Lateral view of apex of abdomen of male (*type*). (Greatly enlarged.)
- Fig. 14.—*Bucrates lanista* new species. Head and pronotum of female (*type*). Dorsal view. ($\times 1\frac{1}{2}$)
- Fig. 15.—*Bucrates lanista* new species. Pronotum of female (*type*). Lateral view. ($\times 1\frac{1}{2}$)
- Fig. 16.—*Bucrates lanista* new species. Subgenital plate of female (*type*). (Greatly enlarged.)
- Fig. 17.—*Bucrates lanista* new species. Lateral view of apex of abdomen of female (*type*). (Natural size.)
- Fig. 18.—*Endecous itatibensis* new species. Subgenital plate of male (*type*). (Greatly enlarged.)
- Fig. 19.—*Endecous itatibensis* new species. Dorsal field of tegmen of male (*type*). ($\times 4$)
- Fig. 20.—*Endecous itatibensis* new species. Palpus of male (*type*). (Greatly enlarged.)
- Fig. 21.—*Endecous itatibensis* new species. Caudal tarsus and apex of tibia of male (*type*). Internal face. (Greatly enlarged.)
- Fig. 22.—*Endecous itatibensis* new species. Caudal tarsus and apex of tibia of male (*type*). Dorsal face. (Greatly enlarged.)
- Fig. 23.—*Tafalisca paulista* new species. Head and pronotum of female (*type*). Dorsal view. ($\times 3$)
- Fig. 24.—*Tafalisca paulista* new species. Apex of ovipositor from dorsum. *Type*. (Greatly enlarged.)
- Fig. 25.—*Tafalisca paulista* new species. Caudal limb of female (*type*). ($\times 3$)



REHN—BRAZILIAN DERMAPTERA AND ORTHOPTERA